National Aeronautics and Space Administration

Lyndon B. Johnson Space Center
Houston, Texas

Trading technology

More than 1,200 top executives attend NASA JSC Inspection and learn about center technologies. Story on Page 3.

Space medal

Astronaut Shannon Lucid receives the Congressional Space Medal from President Clinton. Story on Page 4.

Space News Roundup

Vol. 35 **December 6, 1996** No. 47

JSC Photo by Robert Markowitz

The X-38 team takes a break from designing and flight-testing the International Space Station crew return vehicle in Bldg. 36. The X-38 could become the first new human spacecraft to travel to and from orbit in the past two decades and be developed at a fraction of the cost of past human space vehicles.

JSC tests new human spacecraft

Design stresses efficiency, versatility

By James Hartsfield

JSC engineers are designing and flight-testing a prototype spacecraft that could become the first new human spacecraft to travel to and from orbit in the past two decades, a spacecraft developed at a fraction of the cost of past human space vehicles.

The most immediate application of the project, designated the X-38, is to develop technology for a prototype emergency crew return vehicle for the International Space Station. But the project also is aimed at developing a crew return vehicle design that could be modified for other uses, such as joint U.S. and international human spacecraft.

The goal is to develop the vehicle with an unprecedented eye toward efficiency, taking advantage of available equipment and already developed technology for as much as 80 percent of the spacecraft's design.

"Using available technology and off-the-shelf equipment can significantly reduce costs," said X-38 Project Manager John Muratore. "The original estimates to build a capsule-type CRV several years ago amounted to more than $2 billion in total development cost. The X-38 concept could develop and build four operational CRVs, vehicles that are more capable and versatile than earlier designs, for less than a quarter of that."

In the early years of the station, a Russian Soyuz spacecraft will be attached to the station as a

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Columbia lands with wealth of satellite data

By Karen Schmidt

Scientists will reap the rewards of STS-80 during the coming months from the two satellite payloads *Columbia* and its crew bring home as engineers inspect a stuck hatch that prevented the crew from performing two space walks.

Commander Ken Cockrell, Pilot Kent Rominger and Mission Specialists Tammy Jernigan, Tom Jones and Story Musgrave successfully deployed and retrieved both the ORFEUS-SPAS and Wake Shield Facility satellites, bringing scientists more data than expected. At mid-week, *Columbia* was expected to return to Kennedy Space Center's Shuttle Landing Facility at 6:33 a.m. Thursday. Mission managers brought the shuttle home a day early due to predictions of deteriorating weather conditions on Friday at both KSC and Edwards Air Force Base.

Mission managers gave astronomers an extra day to collect data from the ultraviolet astronomy satellite. Early Wednesday morning the crew plucked ORFEUS-SPAS from its orbit and placed it back in *Columbia*'s cargo bay.

Cockrell and Rominger guided *Columbia* to a flawless rendezvous with ORFEUS-SPAS, and Jernigan reached out with the shuttle's robot arm to grapple the German observatory at 2:26 a.m. CST. After hours of tests for the Orbiter Space Vision System, the free flyer was secured back in the cargo bay at 7:14 a.m.

Monday, the crew spent time monitoring onboard experiments and talking with reporters.

"This flight has shown us that every once in awhile life throws you a little bit of a curve, and we would like to think that it's not the curve that counts but how we react to it," Cockrell said. "I think we're going to take advantage of having this mechanical failure onboard to teach us more about hatches and make us better prepared for future flights."

That curve—a jammed hatch that prevented Jernigan and Jones from taking two space walks—could not be conclusively identified by the ground team during the mission and managers decided Sunday not to risk damage to the seals or hatch during the flight by forcing the hatch open.

"There is always the potential that the seals could be damaged," Jones said Monday. "We didn't want to damage the hardware for the objectives of this EVA, which could be rescheduled and flown on another flight. The fact that our hatch failed on this flight is a good reminder that space flight is a complex business and we have to pay particular attention to all the details including the ones we have taken for granted on past flights.

"It is good that we had this hatch failure on this mission in a sense that the objectives can be rescheduled and reprogrammed for later accomplishments. We want to make sure we get to the bottom of this hatch problem when we land so that

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JSC offers buyouts to employees until February

JSC once again is offering buyouts—until Feb. 3—with some organizations limiting the number of employees that will be allowed to leave to ensure safe and timely space flight.

"Earlier in the year, we took a critical look at whether a buyout was necessary at the center, and concluded that our budget situation was such that we could reach our targets without having a buyout," said Harvey Hartman, director of Human Resources. "However, we have now been told that we will have to achieve lower workforce targets earlier than planned. In light of this decision, it is no longer possible to reach the lower levels without offering separation incentives."

The JSC plan is designed to meet new budget and staffing levels while continuing to assure that the center meets critical program commitments and that it is done safely, Hartman said. The buyout is designed to preserve JSC's core engineering and scientific workforce. The buyout is a lump-sum payment based upon service and salary history.

In order to qualify for a buyout, employees are eligible if they are a permanent civil servant, have been with NASA for at least one year, and voluntarily retire or resign by Feb. 3.

"There are a few categories of employees who are absolutely excluded from the buyout," Hartman said. "We're excluding these categories because we would have to hire replacements from outside the agency, and the law prohibits us from doing so."

The excluded categories include astronauts, medical doctors, pilots, grade 13 and below certified flight controllers, trainers and flight design analysts in Mission Operations.

Employees who are eligible for the buyout include all those assigned to the Business and Information Systems Directorate. Six employees of the Space Station Program Office can take the buyout with priority given to grade 14 and above employees.

No more than 10 percent of the employees in the Space Shuttle Program Office, Space Operations Office Phase 1 Program Office and EVA Project Office will be given the

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Space conference set

JSC Director George Abbey will open a national space conference at 8:30 a.m. Monday, beginning a three-day forum on bridging the space frontier to the next century.

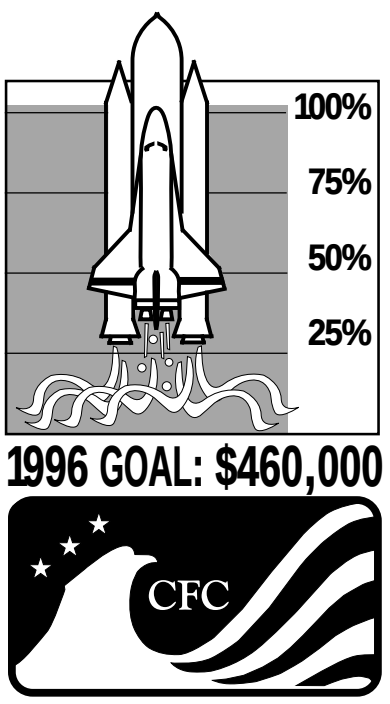
The American Astronautical Society conference, entitled "Space Exploration and Development: Beyond the Space Station," will be held Monday-Wednesday at South Shore Harbour Conference Center. A series of technical sessions will be offered free to badged JSC civil servants, beginning with "Space Exploration and Development" at 9 a.m. Monday. The second technical session will cover "Space Transportation" from 1:30-5 p.m.

The Exhibit Hall will be open from 10 a.m.-5 p.m. Tuesday, with the first technical session on "Space Exploration Beyond Low-Earth Orbit" set for 8 a.m.-noon. Session four will cover "Space Resources" from 2-5 p.m.

Wednesday, the Exhibit Hall once again will be open from 10 a.m.-4 p.m. The first technical session of the day will cover "Space Industrialization into the Next Century" from 9 a.m.-noon. The final technical session of the conference will cover "International Workshop on Moon and Mars Exploration: Identification of Synergisms."

There will be a final panel at 4 p.m. Wednesday to discuss "Benefits and Detriments of Cooperation for Lunar and Mars Mission Programs."

The entire program for the conference is located on the Internet at: http://www.lance.colostate.edu/~willy/ceiss.html



Pathfinder launches to Mars

NASA's Mars Pathfinder spacecraft left Earth Wednesday to begin its mission to study the red planet.

Pathfinder was successfully launched at 12:58 a.m. CST Wednesday from Cape Canaveral Air Station in Florida. The spacecraft separated from the Delta II launch rocket on time and is now on its path to Mars.

The Mars Pathfinder will deliver a small rover vehicle, Sojourner, to the red planet for the first time in 20 years. Pathfinder will demonstrate a innovative approach to landing a spacecraft and rover the surface of Mars.

The primary objective of the mission is to test the low-cost method of delivering a spacecraft, science payload and free-ranging rover to the surface of the red planet. Pathfinder's nominal mission lifetime is about 30 Earth days. Pathfinder will study ancient rocks to understand the nature of the early environment on Mars and the processes that have lead to the features that exist today.

NASA has selected an ancient flood plain on Mars as the landing site for Pathfinder. Centuries ago, when water flowed on Mars, great floods inundated the landing site, located on a rocky plain in an area known today as Ares Vallis. The site is 527 miles southeast of the location of Viking Lander 1, which in 1976 became the first spacecraft to land on Mars. The spacecraft, scheduled to arrive at Mars on July 4, 1997, will parachute down to Ares Vallis at the mouth of an ancient outflow channel chosen for the variety of rock and soil samples it may present.